

REMARKS/ARGUMENTS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-22 are presently active. Claims 21-22 have been presently added, and Claims 1 and 3 have been presently amended.¹

In the outstanding Office Action, Claims 1-6, 10-14, and 19-20 were rejected under 35 U.S.C. § 102(b) as being anticipated by Motoshige (Jap. Pat. Publ. No. 2001-334114). Claims 7-9 and 15-19 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Motoshige in view of Ohno (U.S. Pat. No. 6,669,751).

Regarding Claims 1 and 3, Claim 1 has been clarified to better conform with U.S. claim drafting practice. Claim 1 defines:

A honeycomb structural body, comprising:
an assembly of one or more pillar-shaped porous ceramic members,
said assembly of ceramic members having,
a plurality of through-holes arranged side by side in a longitudinal
direction of the assembly,
partitions separating one through-hole from another, and
plugs at alternate ends of the through-holes, wherein
an opening area at one end face of the honeycomb structural body is
different from an opening area at the other end face thereof, and
the ceramic members comprise a silicon-ceramic composite material
including a ceramic constituent and a silicon constituent separated from the
ceramic constituent.

Independent Claim 3 recites many of these same elements. The examiner's attention is invited to Applicants' Figure 2a-3b for non-limiting examples of this assembly. The examiner's attention is invited to Applicants' discussion on pages 34-37 where Applicants describe the process by which powdered silicon and ceramic powder are formed in a "green" state for sintering into the claimed silicon-ceramic composite material. The silicon material

¹ For support of the new claims, the examiner's attention is directed to paragraphs [0056] to [0058], and [0065] of the publication of this application (i.e. U.S. Pat. Appl. Publ. No. 2006/0068159 A1)

performs a function of binding the silicon-ceramic composite material upon firing. See specification, page 34, lines 18-26. Furthermore, the silicon powder is retained as a separated constituent from the ceramic after firing, as indicated by the presence of x-ray diffraction peak for crystalline silicon. See specification, page 37, lines 5-22. In other words, the silicon material of the silicon powder does not completely alloy with the ceramic powder becoming a homogeneous ceramic material alloyed with silicon. Rather, the claimed silicon-ceramic composite material including a ceramic constituent and a silicon constituent separated from the ceramic constituent is produced.

Applicants have reviewed the applied art references and respectfully submit that neither Motoshige nor Ohno cited in the Office Action disclose or suggest the claimed silicon-ceramic composite material. While Motoshige in numbered paragraph [0024] of the machine translation used by the examiner describes silicon carbide, silicon carbide is an alloy of Si and C in equal parts in which there exists no segregated silicon part. Rather, the silicon is dispersed with the carbon in equal parts throughout the material. Similarly, Ohno describe at col. 5, lines 35-41, the use of silicon carbide and other silicon alloy materials.

Moreover, Applicants' have found unexpected results with the use of the claimed silicon-ceramic composite as compared a conventional ceramic material. Applicants state in the paragraph bridging pages13 and 14:

However, according to the inventors' studies, it is found that the porous ceramic member made of the silicon-ceramic composite material formed by binding ceramic particles through silicon tends to lower Young's modulus as compared with the case of not interposing silicon, and if Young's modulus is lowered, the deflection amount becomes small when the same power is applied, and hence the wall portion of the ceramic member is not deflected by vibrations of diesel engines or vibrations through pressure of the exhaust gas at the same degree and as a result, ash accumulated on the partition becomes hard to be peeled off.

Accordingly, the applied art neither individually nor in combination discloses the claimed silicon-ceramic composite. Moreover, should the examiner consider the application of new

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secondary references to the present art rejection, a determination of the obviousness of such a new rejection needs to consider Applicants' unexpected results. M.P.E.P. § 2141.01 indicates that objective evidence such as unexpected results must be considered in every case in which they are present.

Hence, with the applied art references not disclosing or suggesting the claimed silicon-ceramic composite and with Applicants' unexpected results, Claims 1 and 3 (and the claims dependent therefrom) are believed to be patentable.

Consequently, in light of the present amendments and the above discussions, the outstanding grounds for rejection are believed to have been overcome. The application is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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